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ALBERTO I. ROCA
Appl. No. 09/358,103*Amendments*

Please amend the application as follows:

In the Claims:

Please cancel claims 1-54 without prejudice to or disclaimer of the subject matter contained therein. Applicant reserves the right to prosecute the subject matter of canceled claims in one or more continuation and/or divisional applications.

Please add the following claims:

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55. A purified mutant RecA protein comprising SEQ ID NO: 3 and having an enhanced DNA binding activity compared to an unmutated RecA protein from the same source, wherein a naturally occurring amino acid residue, located within said sequence, is replaced with an amino acid residue which is volumetrically larger than the replaced amino acid residue.
56. The purified mutant RecA protein of claim 55, wherein said replacement occurs at residue 4 of SEQ ID NO: 3.
57. The purified mutant RecA protein of claim 55, wherein said replacement occurs at residue 13 of SEQ ID NO: 3.
58. The purified mutant RecA protein of claim 55, wherein said replacement occurs at residue 14 of SEQ ID NO: 3.
59. The purified mutant RecA protein of claim 55, wherein said replacement occurs at residue 15 of SEQ ID NO: 3.
60. The purified mutant RecA protein of claim 55, wherein said replacement occurs at residue 16 of SEQ ID NO: 3.
61. The purified mutant RecA protein of claim 55, wherein said replacement occurs at

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residue 20 of SEQ ID NO: 3.

62. The purified mutant RecA protein of claim 55, wherein said replacement amino acid residue is selected from the group of phenylalanine, lysine, tyrosine, arginine, and tryptophan.
63. The purified mutant RecA protein of claim 56, wherein said replacement amino acid residue is selected from the group of phenylalanine, lysine, tyrosine, arginine, and tryptophan.
64. The purified mutant RecA protein of claim 57, wherein said replacement amino acid residue is selected from the group of phenylalanine, lysine, tyrosine, arginine, and tryptophan.
65. The purified mutant RecA protein of claim 58, wherein said replacement amino acid residue is selected from the group of phenylalanine, lysine, tyrosine, arginine, and tryptophan.
66. The purified mutant RecA protein of claim 59, wherein said replacement amino acid residue is selected from the group of phenylalanine, lysine, tyrosine, arginine, and tryptophan.
67. The purified mutant RecA protein of claim 60, wherein said replacement amino acid residue is selected from the group of phenylalanine, lysine, tyrosine, arginine, and tryptophan.
68. The purified mutant RecA protein of claim 61, wherein said replacement amino acid residue is selected from the group of phenylalanine, lysine, tyrosine, arginine, and tryptophan.
69. A purified mutant RecA protein comprising SEQ ID NO: 3 and having an enhanced DNA

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cont.

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binding activity compared to an unmutated RecA protein from the same source, wherein a naturally occurring amino acid residue, located within said sequence, but excluding residues 8 and 12 of SEQ ID NO: 3, is replaced with an aromatic amino acid residue.

70. The purified mutant RecA protein of claim 69, wherein said replacement occurs at residue 1 of SEQ ID NO: 3.
71. The purified mutant RecA protein of claim 69, wherein said replacement occurs at residue 3 of SEQ ID NO: 3.
72. The purified mutant RecA protein of claim 69, wherein said replacement occurs at residue 5 of SEQ ID NO: 3.
73. The purified mutant RecA protein of claim 69, wherein said replacement occurs at residue 11 of SEQ ID NO: 3.
74. The purified mutant RecA protein of claim 69, wherein said replacement occurs at residue 17 of SEQ ID NO: 3.
75. The purified mutant RecA protein of claim 69, wherein said replacement amino acid residue is selected from the group of tryptophan, tyrosine, phenylalanine, and histidine.
76. The purified mutant RecA protein of claim 70, wherein said replacement amino acid residue is selected from the group of tryptophan, tyrosine, phenylalanine, and histidine.
77. The purified mutant RecA protein of claim 71, wherein said replacement amino acid residue is selected from the group of tryptophan, tyrosine, phenylalanine, and histidine.
78. The purified mutant RecA protein of claim 72, wherein said replacement amino acid residue is selected from the group of tryptophan, tyrosine, phenylalanine, and histidine.
79. The purified mutant RecA protein of claim 73, wherein said replacement amino acid residue is selected from the group of tryptophan, tyrosine, phenylalanine, and histidine.

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cont.